Illinois Commerce Commission

Assessment of

South Beloit Water, Gas, and Electric Company's

Reliability Report and Reliability Performance

for Calendar Year 2004

Pursuant to 83 Ill. Adm. Code 411.140

September 22, 2005

1. Executive Summary

Pursuant to Section 16-125 of the Illinois Public Utilities Act and the Commission's electric reliability rules in 83 Illinois Administrative Code, Part 411, South Beloit Water, Gas, and Electric Company (South Beloit) filed its annual electric reliability report for calendar year 2004 on June 3, 2005. This document details Staff's assessment of South Beloit's reliability report and Staff's evaluation of South Beloit's reliability performance for calendar year 2004.

South Beloit's reported average frequency of system interruptions (SAIFI) and average frequency of customer interruptions (CAIFI) for 2004 were the lowest of all reporting electric utilities in Illinois, and were improvements from its own prior year statistics.

At 96 minutes, South Beloit's average duration of customer interruptions (CAIDI) in 2004 was the third-best compared to the other Illinois utilities. MidAmerican Electric Company (69.59 minutes) and Interstate Power Company (77.2 minutes) were the only utilities reporting better overall CAIDI statistics than South Beloit for 2004.

South Beloit reported that the highest percentages of customer interruptions in 2004 were caused by animals (24.46%) and lightning (21.58%). Malfunctioning of overhead equipment was listed as the cause for 14.39% of the interruptions, and a total of 7.2% of the interruptions were attributed to tree related problems on the primary. No other cause category was listed as causing as much as 6% of South Beloit's interruptions in 2004.

Staff's field inspections in May 2005 revealed several deteriorated poles in the circuits inspected, some evidence of lightning damage, but only a few other problems. Tree trimming was, generally, well done. South Beloit needs to investigate all of the structural problems noted and take appropriate remedial actions addressing any problems on those circuits, whether or not noted by Staff, which can significantly affect service reliability or public safety.

South Beloit listed a number of activities that the company is doing to improve reliability, summarized in Section 9 of this report. These are positive steps toward reliability improvement. Its reported actions or plans to address problems on its worst performing circuits seem reasonable.

Three specific recommendations are included at the end of this report, summarized as follows:

- South Beloit should address all of the problems on the circuits inspected by Staff.
- South Beloit should inspect and correct problems on all circuits on a regular basis.
- South Beloit should maintain its already good tree trimming program to assure it remains in compliance with NESC Rule 218.

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2. Introduction

Beginning with the year 1999, and at least every three years thereafter, 83 Illinois Administrative Code Part 411.140 requires the Commission to assess the annual reliability report of each jurisdictional entity and evaluate its reliability performance. Code Part 411.140 requires the Commission evaluation to:

A) Assess the reliability report of each entity.

B) Assess the jurisdictional entity's historical performance relative to established reliability targets.

C) Identify trends in the jurisdictional entity's reliability performance.

D) Evaluate the jurisdictional entity's plan to maintain or improve reliability.

E) Include specific identification, assessment, and recommendations pertaining to any potential reliability problems and risks that the Commission has identified as a result of its evaluation.

F) Include a review of the jurisdictional entity's implementation of its plan for the previous reporting period.

This document provides Staff's assessment of the annual reliability report covering calendar year 2004 filed by South Beloit Water, Gas, and Electric Company (South Beloit) on June 3, 2005, and Staff's evaluation of South Beloit's reliability performance for calendar year 2004. This report is organized to include all of the above listed requirements.

3. South Beloit's 2004 Customer Base and Service Territory

As of December 31, 2004, South Beloit provided electric service to 8,904 customers in Illinois. South Beloit's service territory includes the villages of South Beloit and Rockton, which are predominately urban, and the surrounding rural areas in the townships of Rockton and Roscoe, Winnebago County.

4. South Beloit's Electric Distribution System

South Beloit serves its territory with a radial 12.47 kV distribution system from four 69/12.47 kV substations. Transmission services in the area are provided by a 69 kV networked transmission system owned and operated by American Transmission Company, LLC (ATC).

Code Part 411.120(b)(3)(G) requires the utilities to report on the age of their distribution facilities. South Beloit estimates that the average age of its 6,040 poles in service is 25.8 years. Approximately 280 poles are over the age of 60 years. South Beloit's approximately 97 miles of underground cable in service has an average age of approximately 11.9 years. 10.7 miles (11%) of South Beloit's underground cable is over 25 years old. The average ages of South Beloit's distribution substation equipment range from 8 years for battery systems to 19 years for voltage regulators.

5. Assessment of South Beloit's 2004 Reliability Report

South Beloit filed its annual electric reliability report for calendar year 2004 on June 3, 2005, as required by Section 16-125 of the Public Utilities Act and the Commission's electric reliability rules in 83 Illinois Administrative Code, Part 411.

South Beloit's report is well organized, with the information sequenced to follow the pattern of Code Part 411. Staff found South Beloit's report to be compliant with the reporting requirements specified in the Code.

6. South Beloit's Historical Performance Relative to Established Reliability Targets

Code Part 411.140(b)(4)(A-C) establishes electric service reliability targets that jurisdictional entities (utilities) must strive to meet. These targets specify limitations on customer interruptions as well as hours of interruption that a utility must strive not to exceed on a per customer basis. Code Part 411.120(b)(3)(L) requires each utility to provide a list of every customer, identified by a unique number, who experienced interruptions in excess of the service reliability targets, the number of interruptions and interruption duration experienced in each of the three preceding years, and the number of consecutive years in which the customer has experienced interruptions in excess of the service reliability targets.

In April 2004, South Beloit, along with all other regulated Illinois electric utilities, agreed to report on all interruptions (controllable and uncontrollable) as defined in Code Part 411.20 in relation to the service reliability targets for the reporting periods of 2003 through 2007, and to include the specific actions, if any, that the utility plans or has taken to address the customer reliability concerns.

The customer service reliability targets are listed in Table 1.

Table 1
CUSTOMER SERVICE RELIABILITY TARGETS

Immediate primary source of service operation voltage	Maximum number of interruptions in each of the last three consecutive years	Maximum hours of total interruption duration in each of the last three years
69kV or above	3	9
Between 15kV & 69kV	4	12
15kV or below	6	18

In its 2004 reliability report, South Beloit stated that none of its customers exceeded the above service reliability targets in each of the preceding three years.

It is noteworthy that South Beloit also reported that only three of its customers experienced five interruptions in 2004, and none experienced more interruptions than that. As shown in Table 2, South Beloit has improved in each of the last two years in terms of the total number of its customers experiencing a set number of service interruptions.

Table 2

NUMBER OF INTERRUPTIONS	NUMBER OF CUSTOMERS		
	2004	**2003**	**2002**
0	4,904	3,604	1,355
1	3,109	1,061	3,552
2	505	2,315	1,459
3	262	967	1,445
4	121	670	297
5	3	48	106
6	0	66	20
7	0	8	47
8	0	0	27
Total Customers:	**8,904**	**8,739**	**8,308**

7. Analysis of South Beloit's Year 2004 Reliability Performance

Table 3 shows South Beloit's company-wide reliability indices for calendar year 2004 compared to the other eight reporting Illinois electric utilities. This data indicates that South Beloit was the most reliable electric utility in Illinois in terms of average frequency of system interruptions (SAIFI) and average frequency of customer interruptions (CAIFI) in 2004.

At 96 minutes, South Beloit's average duration of customer interruptions (CAIDI) in 2004 was the third-best compared to the other Illinois utilities. MidAmerican Electric Company (69.59 minutes) and Interstate Power Company (77.2 minutes) were the only utilities reporting better overall CAIDI statistics than South Beloit for 2004.

Note: The comparison of company-wide reliability indices for Illinois electric utilities should indicate relative reliability levels achieved. The reader of this report should, however, keep in mind that each Illinois electric utility has a unique electric system, a unique group of customers, and a unique method of defining, recording, and reporting the interruption data. These differences make precise utility-to-utility comparisons difficult.

Table 3
ILLINOIS UTILITY RELIABILITY INDICES
CALENDAR YEAR 2004

	SAIFI	CAIDI (minutes)	CAIFI
AmerenCIPS	1.66	143	2.01
AmerenUE	1.69	278	2.05
AmerenCILCO	1.45	247	2.03
AmerenIP	1.49	268	2.26
ComEd	1.21	128	2
MidAmerican	2.028	69.59	2.716
Interstate	0.64	77.2	1.4
Mt. Carmel	2.69	177.06	2.86
South Beloit	**0.61**	**96**	**1.35**

SAIFI: System Average Interruption Frequency Index. This represents the average interruption frequency for all customers on the electric system, including customers who had no interruptions (total customer interruptions divided by total system customers).

CAIDI: Customer Average Interruption Duration Index. This represents, for the group of customers that actually had one or more interruptions, the average interruption duration.

CAIFI: Customer Average Interruption Frequency Index. This represents the average interruption frequency for the group of customers that had interruptions. A CAIFI index much higher than SAIFI suggests that subsets of customers experienced significantly more frequent interruptions than the overall system average.

Table 4 shows a breakdown of seventeen causes (with subcategories) of sustained customer interruptions by cause category, as reported by South Beloit for year 2004. The total number of interruptions ("events") reported for 2004 is down 7.33% from the same data reported for year 2003.

South Beloit reported that the highest percentages of customer interruptions in 2004 were caused by animals and by weather (each 24.46%). South Beloit listed trees as the cause for 11.52% of the interruptions in 2004, with 7.2% involving primary circuits and 4.32% involving secondary. Some of the interruptions attributed to weather may also have been tree related, but Staff's field inspections in May 2005 revealed very few problems with South Beloit's tree trimming program. See Section 7 of this report for details.

Table 4
TOTAL INTERRUPTIONS BREAKDOWN BY CAUSE

Interruption Cause Categories	Number of Interruptions	Percent of Total Interruptions
Animal Related	34	24.46%
Weather Related—Lightning	30	21.58%
Weather Related—Wind	4	2.88%
Overhead Equipment Related (Malfunction)	20	14.39%
Unknown	6	4.32%
Public—Vehicle	6	4.32%
Public—Other than vehicle	6	4.32%
Intentional—Scheduled Construction, Maintenance, or Repair	7	5.04%
Intentional—Public Safety	1	0.72%
Tree Related—Tree Contact (Primary)	6	4.32%
Tree Related—Tree Contact (Secondary)	4	2.88%
Tree Related—Broken Limb (Primary)	4	2.88%
Tree Related—Broken Limb (Secondary)	2	1.44%
Other Utility	0	0%
Underground Equipment Related—Underground Failure	2	1.44%
Underground Equipment Related—Malfunction	6	4.32%
Utility—Other Error	1	0.72%
TOTAL:	**139**	**100.00%**

Code Part 411.120(b)(3)(I)&(J) requires the reporting utility to list its worst performing circuits (subsection I) and then state (subsection J) what corrective actions are planned to improve those circuits' performance. Table 5 shows the South Beloit circuits with the highest (worst) reliability indices for 2004. The bolded values represent the indices that caused the circuit to be a worst performer.

Table 5
SOUTH BELOIT CIRCUITS WITH HIGHEST SAIFI, CAIDI, & CAIFI
CALENDAR YEAR 2004

CIRCUIT	SAIFI	CAIDI (minutes)	CAIFI
SHIJ54* (Rural area west of South Beloit)	**1.92**	154.7	**1.92**
ESBJ615 (Rural area east of South Beloit)	1.61	115.8	**1.69**
SHIJ52 (Rural area west of South Beloit)	0.01	**551.0**	1.00

(Circuit SHIJ54 was also a worst performing circuit, based on its CAIDI, in 2003).

As part of his review of South Beloit's 2004 reliability, Staff's Senior Electrical Engineer Jim Spencer inspected South Beloit's reported worst performing SAIFI Circuit SHIJ54, marked with an asterisk (*) in Table 5, and one additional South Beloit "next-worst SAIFI circuit". This additional circuit was Circuit SHWJ672 (south end of South Beloit), which had a SAIFI of 0.517, a CAIFI of 1.70, and a CAIDI of 79.4 minutes in 2004. Staff also performed spot-checks of the status of problems noted during last year's inspections on Circuits PRKJ1504 (South Beloit), EARJ531 (rural area east of South Beloit), and EARJ535 (East Rockton).

The field inspections allow Staff to verify that work was performed on the circuits as reported by the utilities and to see if there are any apparent reasons for poor performance of these circuits. Staff also notes any problems with the facilities it observes which may pose a threat to future service reliability or to public safety. For example, Staff looks for poor tree trimming practices, broken poles, split crossarms, damaged electrical devices, etc.

Summaries of items noted by Staff during the field inspections of the selected South Beloit distribution circuits this year are included in the text of this report with the description of each of the circuits inspected. *(As mentioned to South Beloit when providing them with a copy of these summaries in July, the summary for each of the circuits inspected represents typical observations noted by ICC Staff during the field inspection and is not intended to represent all of the problems or potential problems that may exist on the circuit. Also, Staff's circuit inspections are not intended to take the place of the more thorough, detailed inspections that should be performed periodically by the utility company.)*

South Beloit's Circuit SHIJ54 is a 12.47 kV circuit serving a small northwestern part of South Beloit and a rural area west of South Beloit. This circuit was a worst performing circuit in 2004, with the highest reported SAIFI (1.92) and CAIFI (1.92) of all South Beloit circuits that year. It was also South Beloit's highest CAIDI circuit in 2003.

South Beloit reported that a vehicle accident at a two-phase deadend pole with single-phase taps in either direction caused Circuit SHIJ54 to be a worst performer. Damage caused by this one accident resulted in a SAIFI of 1.37, of the total annual SAIFI for the circuit of 1.92. While it is unusual for one event to cause a circuit to have the highest SAIFI of all circuits at a utility, the overall SAIFI of 1.92 is also extraordinarily low for a utility's worst-performing SAIFI circuit. As noted in the summary of the inspection field notes for this circuit, Figure 1, Staff found several deteriorated poles, but few other problems. Tree trimming and animal guarding was generally well done. Figures 2 through 6 show some of the problems noted on this circuit.

Figure 1

Summary of Distribution Circuit Field Inspection by ICC Staff			
Utility:	**South Beloit Water, Gas, and Electric Co.**	**Date:**	**5/23/05**
Circuit:	**SHIJ54 (Rural area west of South Beloit)**	**Inspector:**	**J. D. Spencer, w/ Greg Ardrey (Alliant)**
Gen. Notes:	This was a worst performing 12 kV circuit in 2004, repeating in that category from 2003. It serves a small northwestern part of South Beloit and a rural area west of South Beloit. Tree trimming looked very good, with one exception noted. Animal guards were numerous. Several of the roads were not labeled on the circuit maps provided.		

Map No.	*Item Description*	*Photo(s)*	*Location*
01SW of 14	Ash tree into primary	M19, M20	On Fischer Rd. between poles 29/52 & 34/52
06NW	Shell rotted pole		Pole 31/01 at the NE corner of Fischer Rd. & Moore St., South Beloit
06NW	2 shell rotted poles		Poles 32/50 & 33/45 on Moore St. south of Fischer Rd., South Beloit
06NW	Shell rotted pole		Pole 37/14 on S. Lincoln Ave. south of Center St., South Beloit
06NW	Split & deteriorated pole top		Pole 51/22 on Miller St. north of Center St., South Beloit
06NW	Deteriorated pole top		Pole 51/13 on Miller St. between Center St. & Rood Ave., South Beloit
06NW	Deteriorated pole top		Pole 51/06 at the SE corner of Miller St. & Rood Ave., South Beloit
08	Missing guy marker		At pole 21/37 in tap going north from Yale Bridge Rd.
09	Lightning damaged pole top	M24	Pole 0/06 on Clover Rd. (not labeled on map), south of Yale Bridge Rd.
11	Missing guy marker		At pole 0/09 on Prairie Rd. (not labeled on map), south of Yale Bridge Rd.
11	Lightning damaged wood brace (roadside--not bad)		At pole 1/51 on Prairie Rd. (not labeled on map), north of Yale Bridge Rd.
11	2 lightning damaged wood braces (not too bad)		At pole 1/49 on Prairie Rd. (not labeled on map), north of Yale Bridge Rd.
11	Badly shell rotted pole	M22, M23	Pole 45/25(?) on Yale Bridge Rd. west of Whitwer Rd. (2 spans east of tap going south from Yale Bridge Rd.)
12	Badly shell rotted pole & bad pole top	M21	Pole 52/08 on Whitwer Rd. north of S. Bluff St. (CTH 45)
15	Broken primary downguy (downguy not needed)		At pole 46/24 on Rockton Rd. (CTH 9) west of Prairie Ave. (not labeled on map)

Figure 2 (Photo 05M24)
Lightning damaged pole top
Circuit SHIJ54, Clover Rd. south of Yale Bridge Rd.

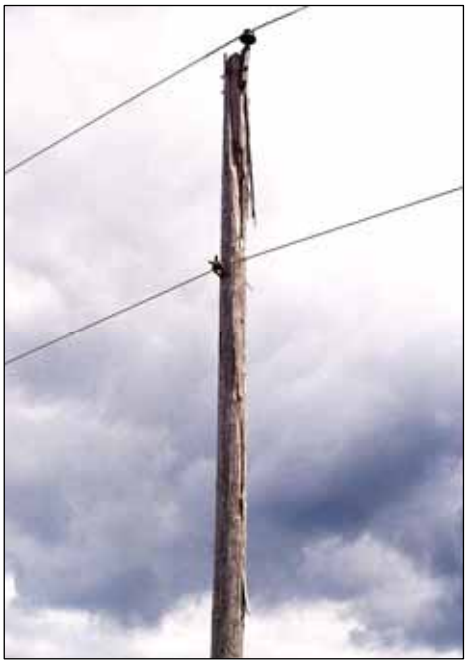


Figure 3 (Photo 05M21)
Badly rotted pole & bad pole top
Ckt. SHIJ54, Whitwer Rd. north of S. Bluff St.

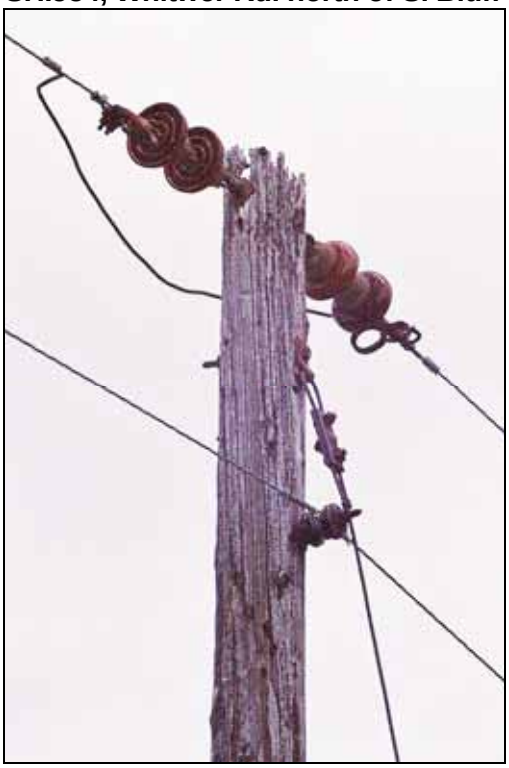


Figure 4 (Photo 05M20)
Ash tree into primary
Ckt. SHIJ54, Fischer Rd., South Beloit

Figure 5 (Photo 05M23)

Figure 6 (Photo 05M22)

Badly shell rotted pole, Circuit SHIJ54, Yale Bridge Rd. west of Whitwer Rd.

South Beloit's Circuit SHWJ672 is a 12.47 kV circuit serving the western part of South Beloit. This circuit was listed as one of South Beloit's "next-ten SAIFI" circuits in 2004, with a SAIFI of 0.517 and a CAIFI of 1.70. Several parts of this circuit are underground. As noted in the summary of the inspection field notes for this circuit, Figure 7, Staff found some deteriorated poles, but no other significant problems during its inspection in May. Tree trimming looked good. Figures 8 through 11 show some of the problems noted on this circuit.

Figure 7

Summary of Distribution Circuit Field Inspection by ICC Staff			
Utility:	**South Beloit Water, Gas, and Electric Co.**	**Date:**	**5/23/05**
Circuit:	**SHWJ672 (South Beloit)**	**Inspector:**	**J. D. Spencer, w/ Greg Ardrey (Alliant)**
Gen. Notes:	This was a next-worst performing 12 kV circuit in 2004, serving the western part of South Beloit. Tree trimming looked good. Animal guards were plentiful. Several parts of the circuit were in underground areas or in back easements.		

Map No.	*Item Description*	*Photo(s)*	*Location*
1 of 7	Badly deteriorated pole top	N1, N2	Pole 56/11 at the west corner of Barbara & Whittmore Dr.
1, 2	Shell rotted pole		Pole 2/09 on Whittmore Dr. SE of Barbara
1, 2	Badly shell rotted pole	N3, N4	Pole 5/08 on Whittmore Dr. SE of Barbara
7	Shell rotted pole & bad pole top		1st pole west of Roscoe Ave. on Oak Grove Ave.
7	Shell rotted pole & bad pole top		SE corner of Roscoe & Oak Grove Aves.
7	Shell rotted pole		Pole 11/11 on Oak Grove Ave. east of Roscoe Ave.
7	Deteriorated & split pole top	N7	Pole 14/10 on Oak Grove Ave. at Fairview Ave.
7	Deteriorated & split pole top	N5, N6	Pole 19/09 on Oak Grove Ave. west of Northwestern Ave.
7	Missing guy marker		At pole 22/08 at Oak Grove & Northwestern Aves.

Figure 8 (Photo 05N3)
Badly shell rotted pole, Circuit SHWJ672, Whittmore Dr. southeast of Barbara

Figure 9 (Photo 05N4)

Figure 10
Deteriorated & split pole top
Circuit SHWJ672,
Oak Grove Ave. west of Northwestern Ave.

Figure 11
Deteriorated & split pole top
Circuit SHWJ672, Oak Grove Ave. at Fairview Ave.

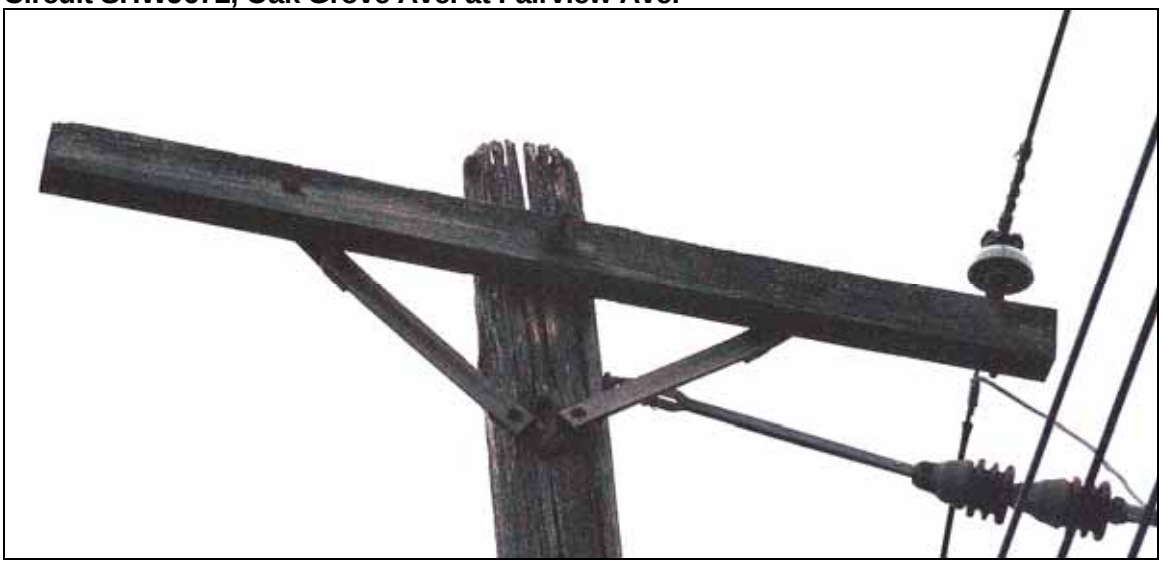


Figure 12 shows a summary of Staff's field notes for follow-up spot checks of problems noted during inspections in 2004 on South Beloit Circuits PRKJ1504, EARJ531, and EARJ535. South Beloit had satisfactorily resolved each of these problem locations prior to Staff's re-inspection in May 2005.

Figure 12

Summary of Distribution Circuit Spot Checks by ICC Staff			
Utility:	**South Beloit Water, Gas, and Electric Co.**	**Date:**	**5/23/05**
Circuits:	**PRKJ1504, EARJ531, & EARJ535**	**Inspector:**	**J. D. Spencer, w/ Greg Ardrey (Alliant)**
Gen. Notes:	These are selected follow-up spot checks of problems noted last year on SBWGE circuits. All four of these issues discovered during last year's circuit inspections have since been resolved.		

Circuit	*Item Description*	*Photo(s)*	*Location*
PRKJ1504	Verified correction of prior year inadequate horizontal clearance between primary conductor & ventilator housings on the back of a commercial building. Ventilators shortened now, providing 6.5 ft. clearance to primary (5.5 ft. required by NESC).	N8, N9	Back of Prairie Hill Warehouses building on the north side of Prairie Hill Rd. and just south of Capacitor Bank 1408S, South Beloit.
EARJ531	Verified correction of a badly twisted crossarm (on a shell rotted pole top). A new crossarm has been installed, and the pole top has been cut off.	N10, N11	Pole 25/0 on Prairie Hill Rd. east of Fulmar Dr., South Beloit. (In front of the Price Brothers site).
EARJ531	Verified correction of prior year inadequate horizontal clearance between primary conductor & a metal parking lot lighting pole. The old lighting pole has been removed. Replacement parking lot lighting has been installed on a SBWGE pole on the south side of the parking lot.	N12, N13, N14, N15	In a N-S line tap directly across Rockton Rd. from the East Rockton Substation, South Beloit.
EARJ535	Verified correction of pine trees growing between primary phase conductors. The pine trees have been topped (as of 5/19/05), and the clearance issue is okay now.	N16, N17, N18	On White School Rd. just west of McCurry Rd., East Rockton.

Staff also performed random inspections of tree conditions near South Beloit's electric lines in the towns of South Beloit and Rockton in May 2005, and found the tree trimming to be very well done in all but three isolated locations. See Attachment "A" for details.

In summary, Staff's field inspections in May 2005 revealed several deteriorated poles in the circuits inspected, but not many serious problems overall. Tree trimming, in all but a few cases, was very well done. South Beloit was responsive to the problems noted by Staff as a result of the 2004 circuit inspections, and had resolved the problems at locations chosen by Staff for spot-checking in May 2005.

8. Trends in South Beloit's Reliability Performance

Figure 13 shows a comparison of company-wide SAIFI values reported by the Illinois utilities for years 2000 through 2004. South Beloit's reported 2004 company-wide SAIFI performance was significantly better than it reported for 2003, and was the best company-wide SAIFI performance among the nine reporting utilities in 2004.

Figure 13

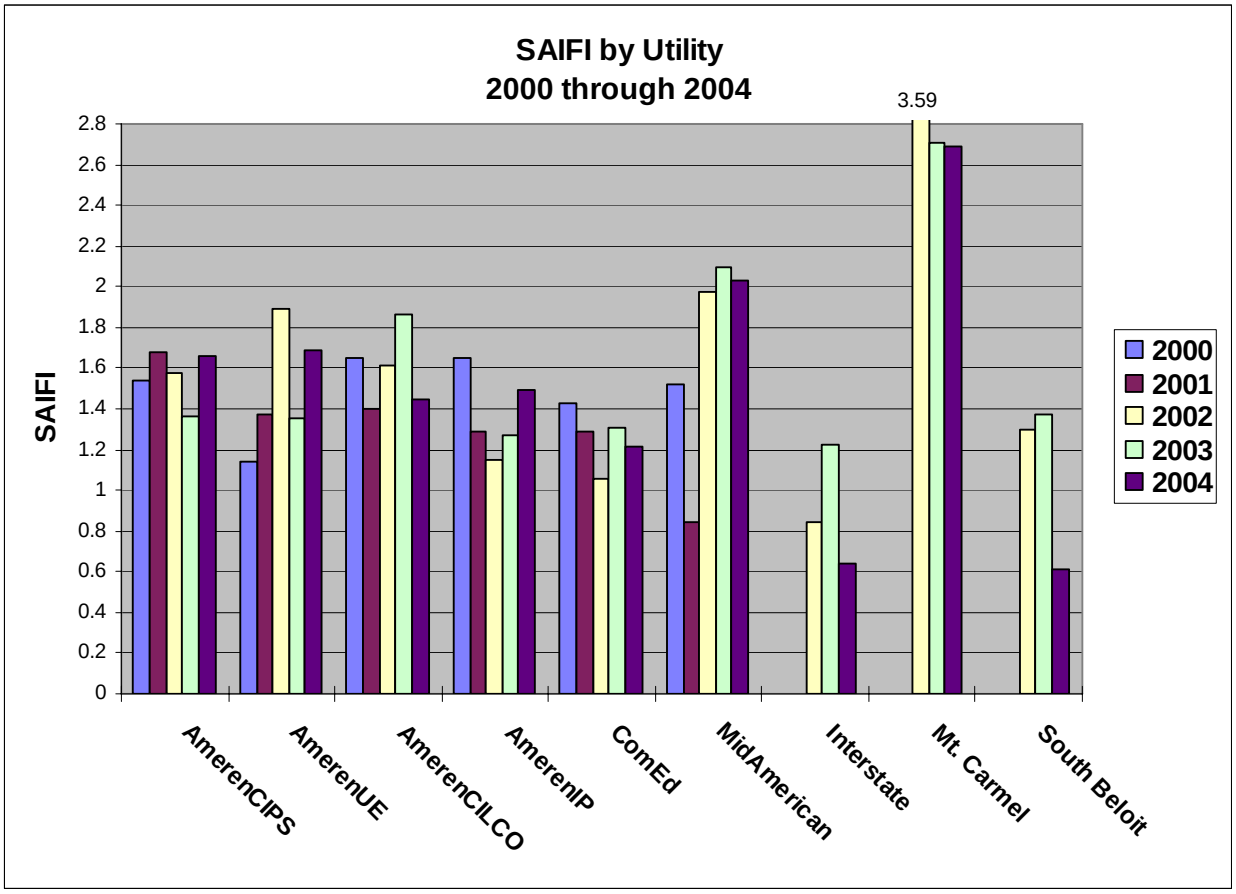


Figure 14 shows South Beloit's company-wide SAIFI indices over the past three years. With only three years of data (South Beloit was first required to provide this data in 2003 for year 2002), it is impossible to establish a meaningful trend. It is notable, however, that South Beloit's company-wide SAIFI in 2004 was less than half of the values it calculated for each of the prior two years.

Figure 14

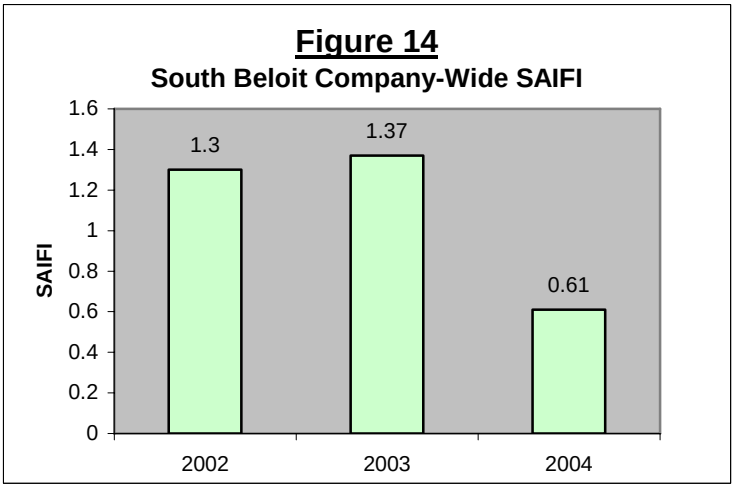


Figure 15 shows a comparison of SAIFI values for each company's single worst performing circuit as reported by the Illinois utilities for years 2000 through 2004. South Beloit's reported worst-circuit SAIFI performance for 2004 is the second best in the nine-utility group, with only Interstate Power Company performing better in this category in 2004.

Figure 15

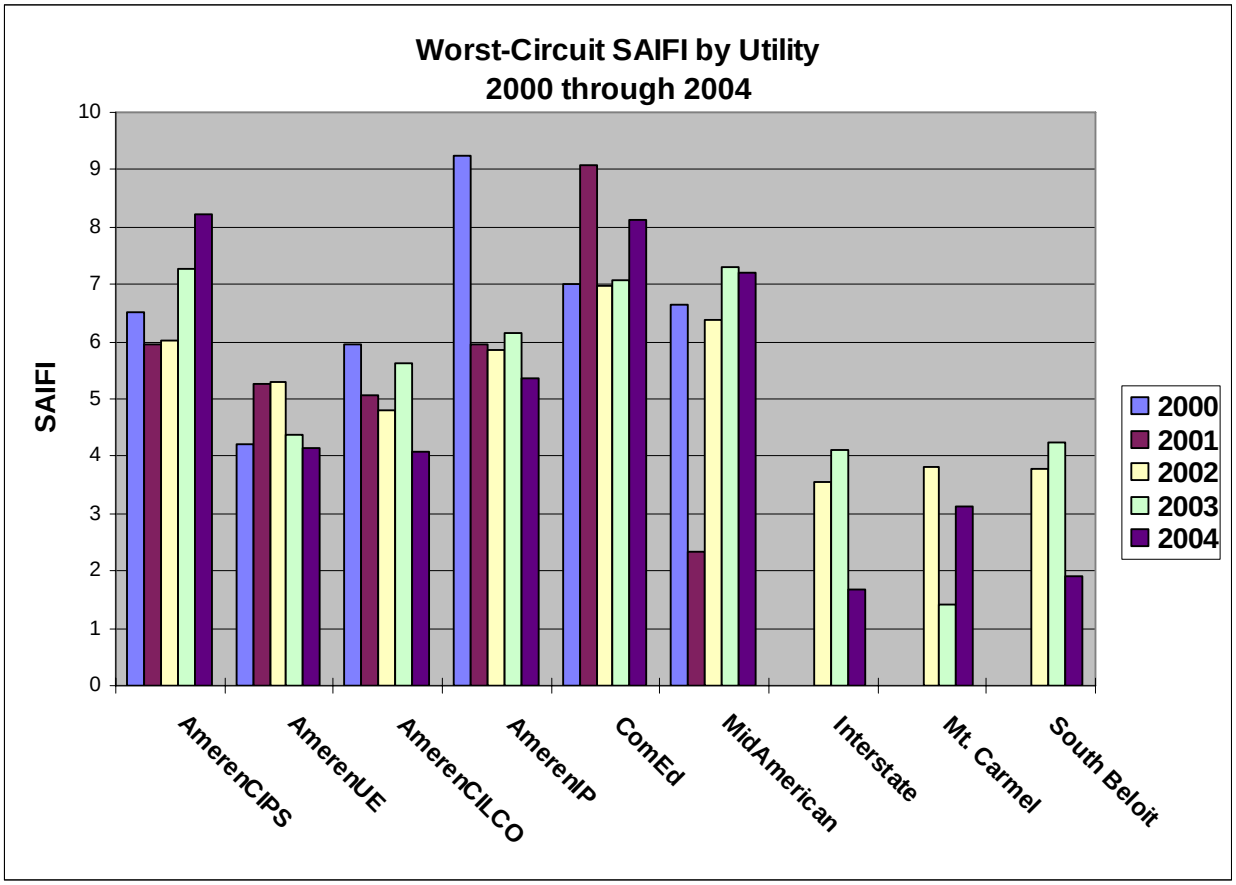


Figure 16 shows the SAIFI index of South Beloit's single worst performing circuit as reported in each of the last three years. Though too little data is available for a meaningful trend, it is notable that South Beloit's worst-circuit SAIFI for 2004 is about half of its worst-circuit SAIFI in each of the prior two years. This is similar to the comparisons of the company's overall SAIFI values for the past three years.

Figure 16

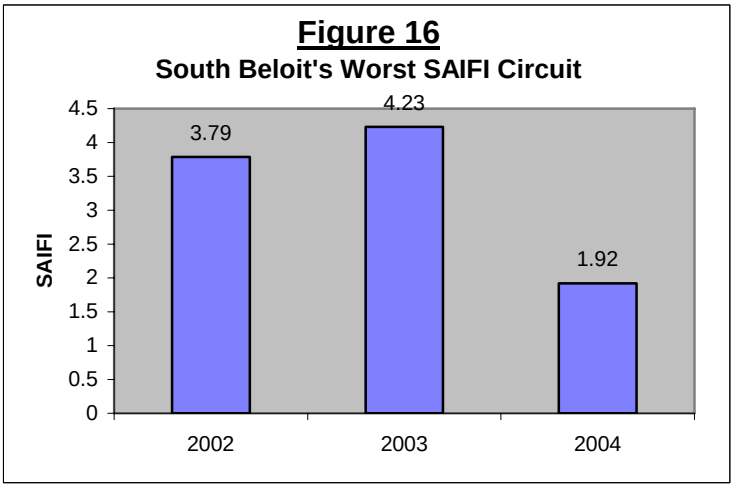


Figure 17 shows a comparison of company-wide CAIDI values reported by the Illinois utilities for years 2000 through 2004. At 96 minutes, South Beloit's reported 2004 company-wide CAIDI performance worsened significantly from year 2003, but was still the third best of the nine-utility group. Only MidAmerican Energy Company (69.59 minutes)

and Interstate Power Company (77.2 minutes) reported better company-wide CAIDI statistics in 2004.

Figure 17

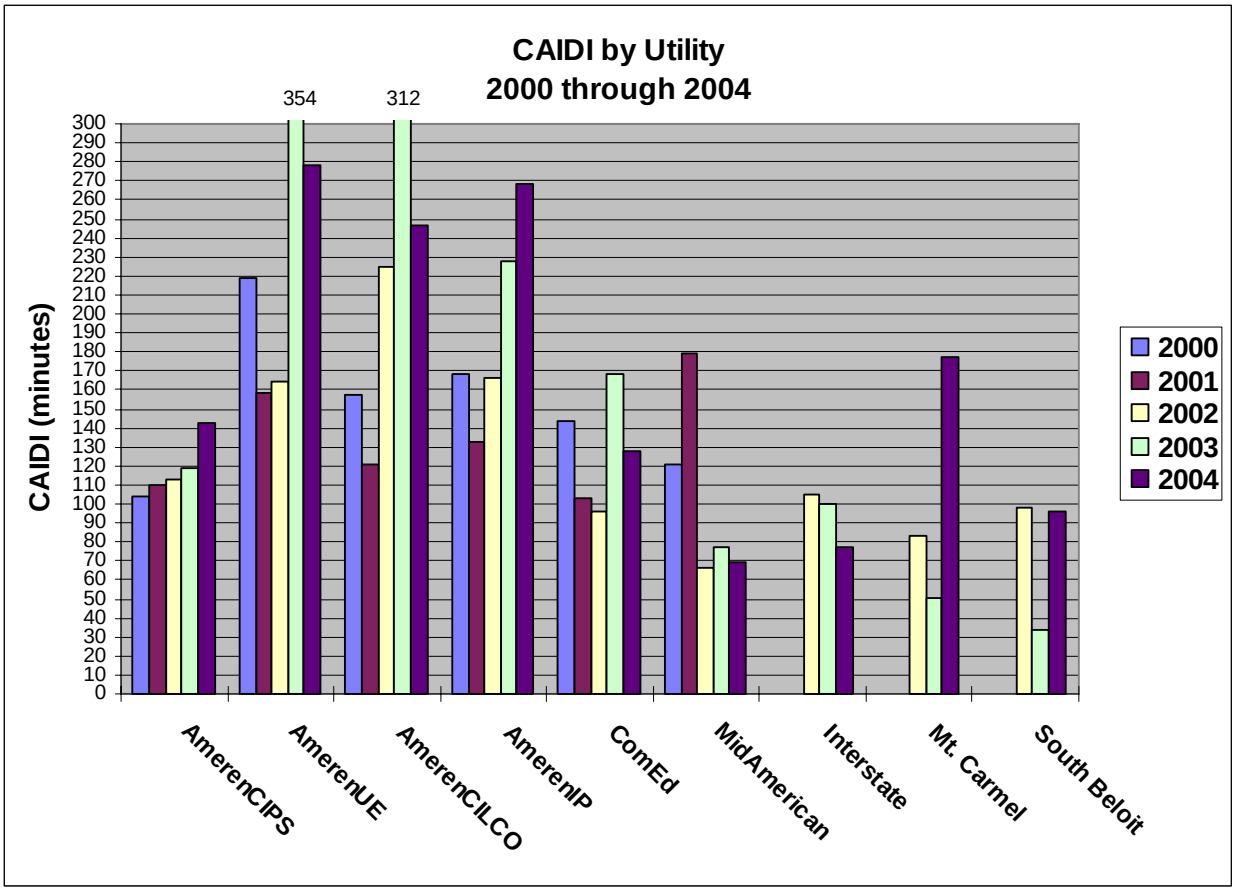


Figure 18 shows South Beloit's company-wide CAIDI statistics over the past three years. As was the case with its company-wide SAIFI statistics, only three years of data is available and it is impossible to establish a meaningful trend. While South Beloit's overall CAIDI for 2004 nearly tripled from what it reported for 2003, it is still quite low compared to most of the other Illinois utilities.

Figure 18

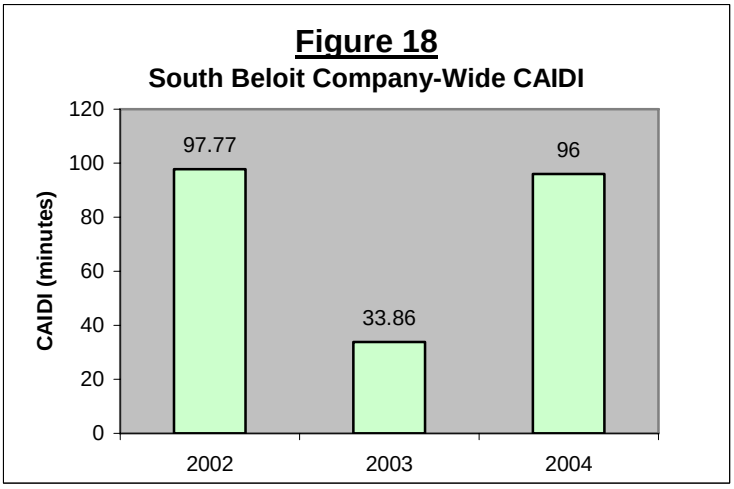


Figure 19 shows a comparison of CAIDI values for each company's single worst performing circuit as reported by the Illinois utilities for years 2000 through 2004. At 551 minutes, South Beloit's reported worst-circuit CAIDI performance for 2004 is far higher than its worst-circuit CAIDI in 2003 (118 minutes), but still very reasonable when compared with the rest of the nine-utility group. Only Interstate Power Company (209.9 minutes), MidAmerican Energy Company (291 minutes), and Mt. Carmel Public Utility Company (361.14 minutes) reported better worst-circuit CAIDI statistics in 2004.

Figure 19

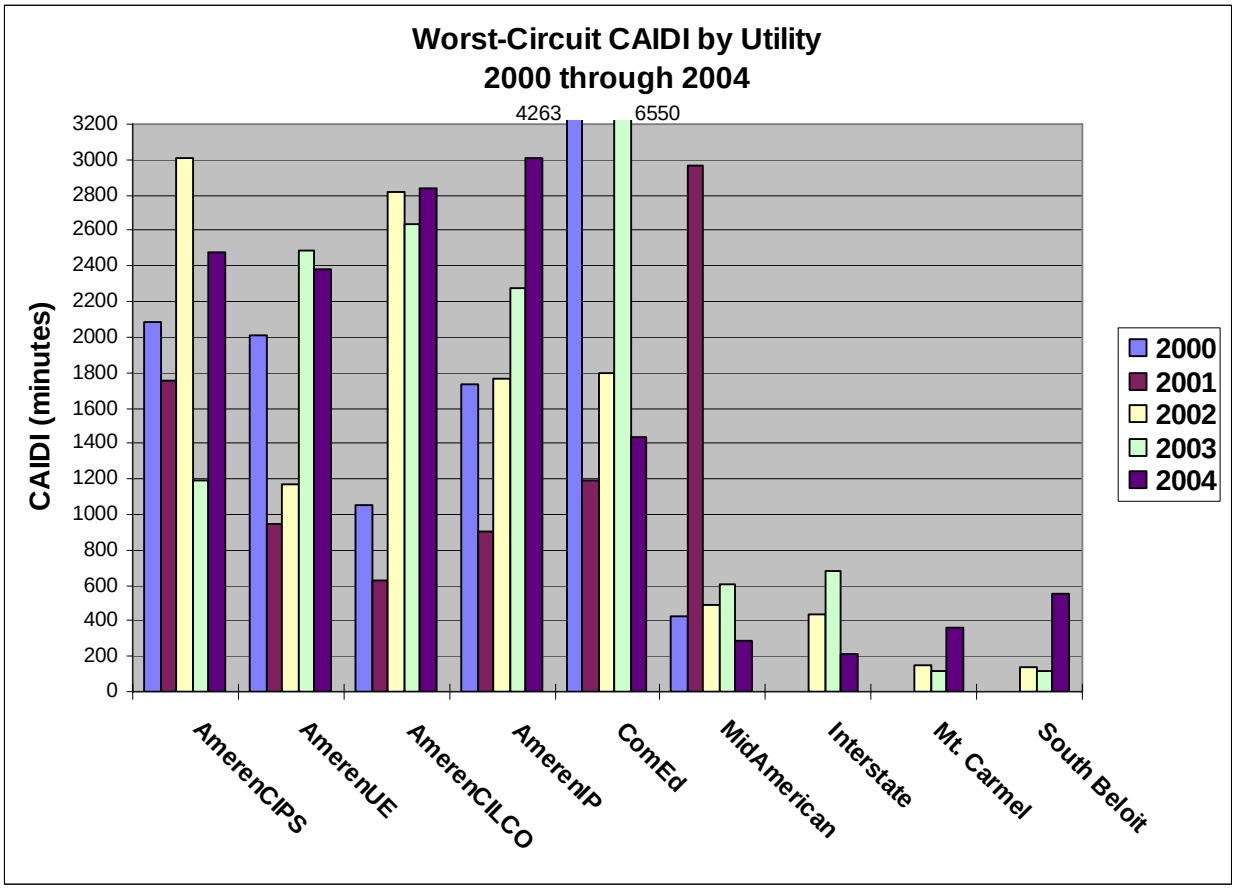


Figure 20 shows the CAIDI index of South Beloit's single worst performing circuit in each of the last three years. South Beloit's worst-circuit interruption duration for 2004 is 4.6 times what it reported for 2003, but there is too little data for a meaningful trend.

Figure 20

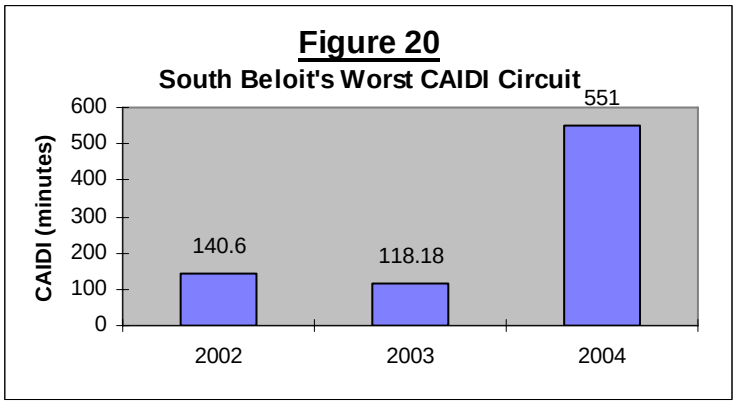


Table 6 shows the number and percentage of South Beloit customers who experienced no service interruptions or less than four service interruptions for each of years 2002 through 2004. This information is also presented graphically in Figure 21. Note that the trends for both of these groups of South Beloit customers have improved from 2002 to 2004. These trends appear to be consistent with South Beloit's overall and worst-circuit SAIFI improvements over the past year.

Table 6
South Beloit Customers with No Interruptions or Less Than Four Interruptions

Year	Total Customers	Customers with No interruptions		Customers with < 4 interruptions	
2002	8,308	1,355	16.31%	7,811	94.02%
2003	8,739	3,604	41.24%	7,947	90.94%
2004	8,904	4,904	55.08%	8,780	98.61%

Figure 21
South Beloit Customers with No or Few (*) Interruptions

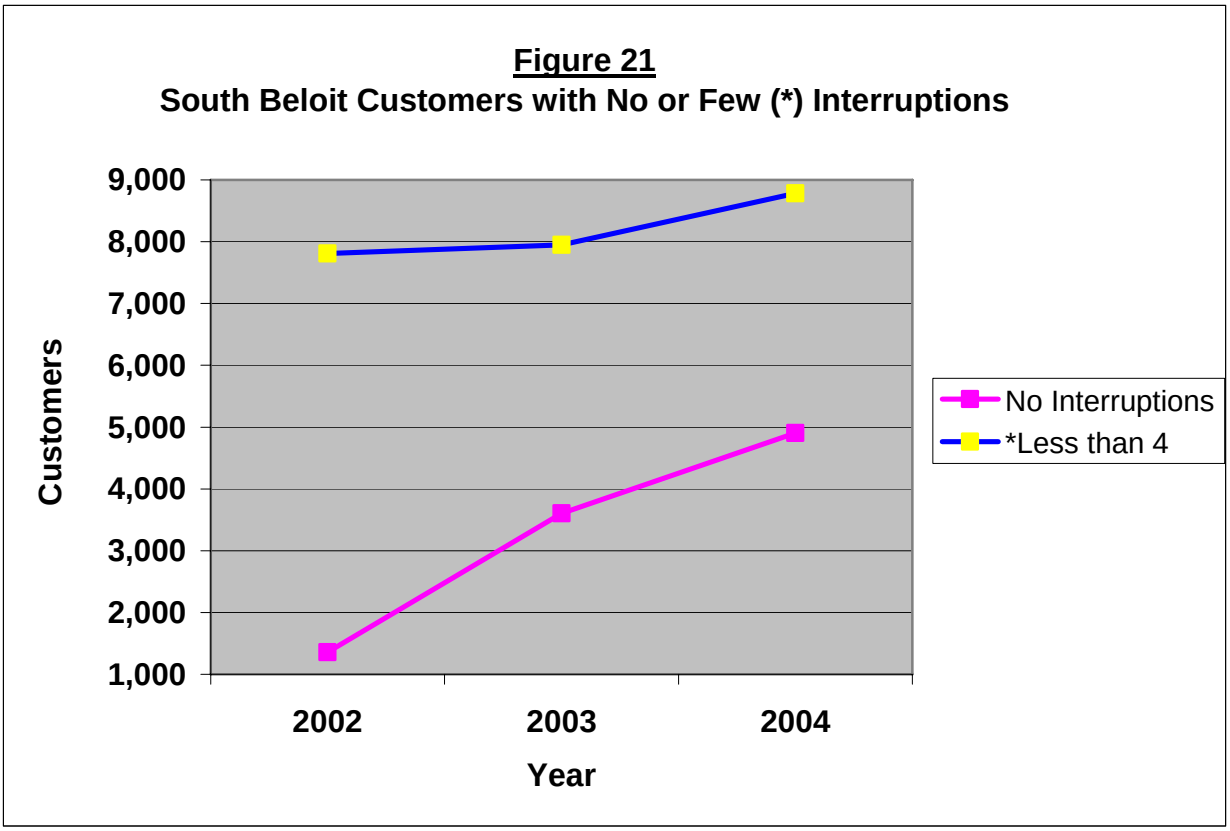


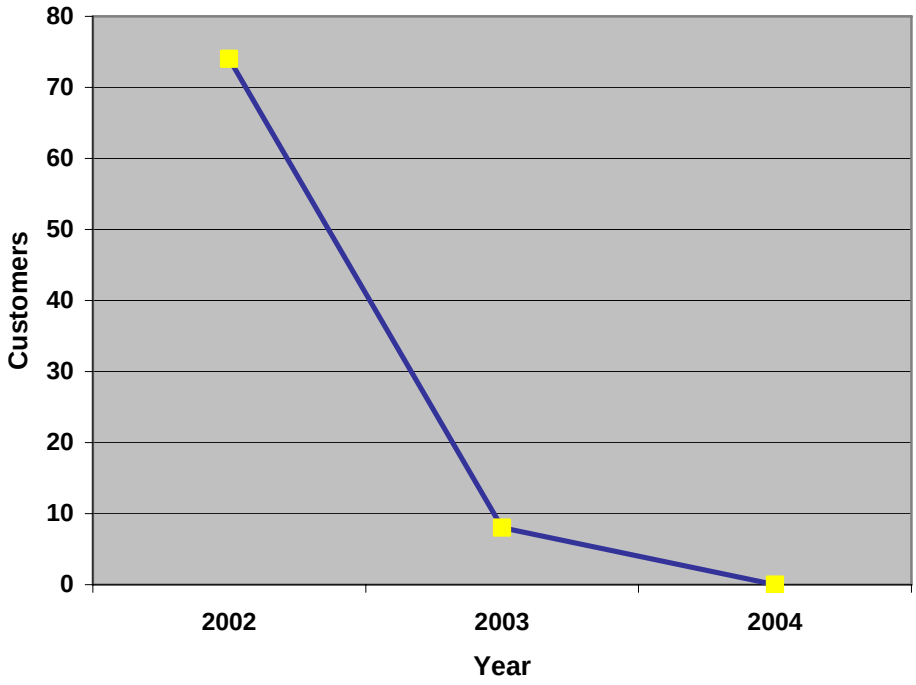
Table 7 shows the number and percentage of South Beloit customers who experienced more than six and more than ten service interruptions for each of years 2002 through 2004. The data for customers experiencing more than six interruptions is also presented graphically in Figure 22. Note that the number of South Beloit customers experiencing more than six interruptions has improved dramatically since 2002, to none in 2004 (South

Beloit reported that three of its customers experienced five interruptions in 2004, and no customers experienced more than that). No South Beloit customers experienced more than eight interruptions in any of the years from 2002 to 2004.

Table 7
South Beloit Customers with More Than Six and More Than Ten Interruptions

Year	Total Customers	Customers with > 6 interruptions		Customers with > 10 interruptions	
2002	8,308	74	0.89%	0	0.00%
2003	8,739	8	0.09%	0	0.00%
2004	8,904	0	0.00%	0	0.00%

Figure 22
South Beloit Customers with More Than 6 Interruptions



Overall, the statistics provided in South Beloit's 2004 reliability report indicate a noticeable improvement of the frequency of customer interruptions during the past year, but a worsening of the duration of interruptions during that same period. South Beloit provided no overall reasons for these changes.

9. South Beloit's Plan to Maintain or Improve Reliability

Plans and activities described in South Beloit's annual reliability report to maintain or improve reliability include:

- A Substation Predictive Maintenance program, including infrared substation surveys, ultrasonic surveys, vibration analysis, dissolved gas in oil analysis, and predictive maintenance.

- Zone Reliability Teams tasked with maintaining reliability and correcting pockets of poor performance.

- Historical Reliability Review, including targeting maintenance or operations efforts to improve individual customer reliability (using reports of customers, feeders, or devices with a larger than typical number of outages over a period of time).

- Engineering-System Planning, including review of substation and circuit loading levels annually following the system peak and identification of any needed remedial action.

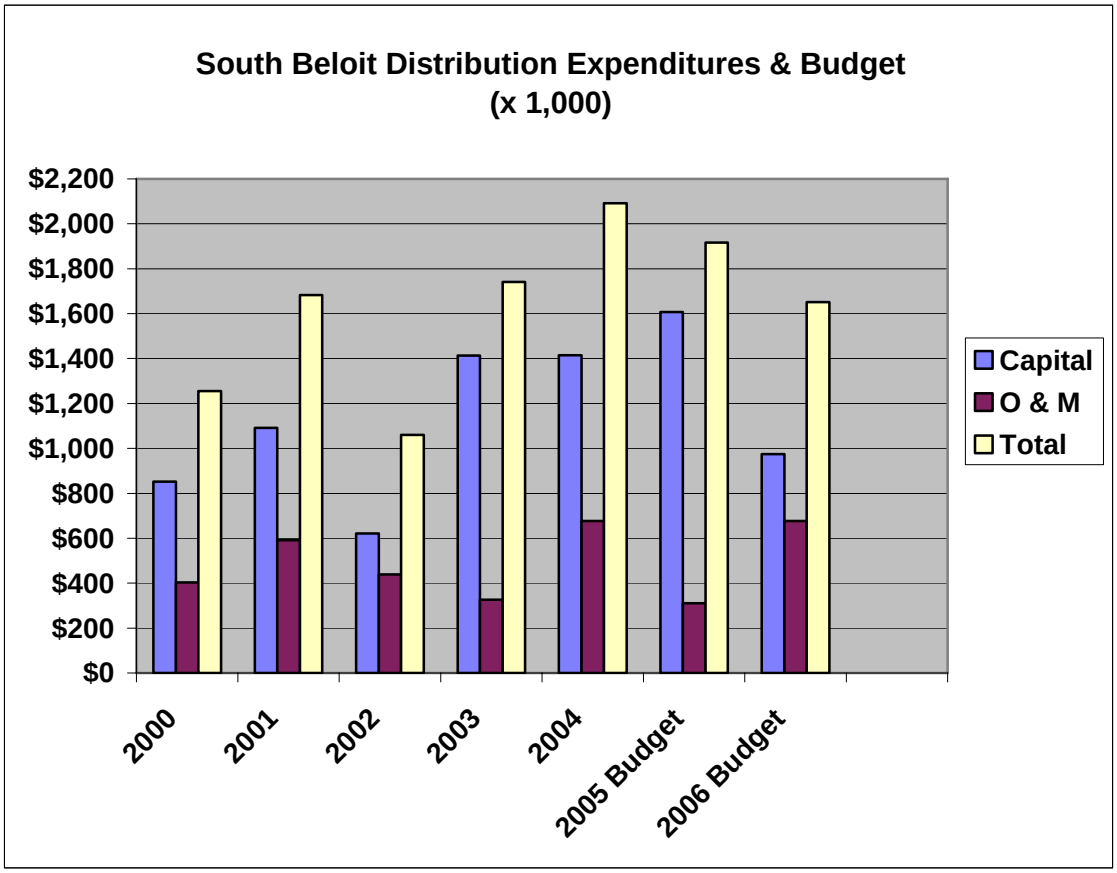
- Several specific projects to meet voltage and capacity requirements or for other reasons, expected to result in reliability improvements.

South Beloit's reported annual expenditures for its distribution system, tree trimming, and transmission system for years 2000 through 2004, and the 2005 and 2006 budgets for these categories, are provided in Table 8. This information for the distribution system and for tree trimming is also represented graphically in Figures 23 and 24.

Table 8

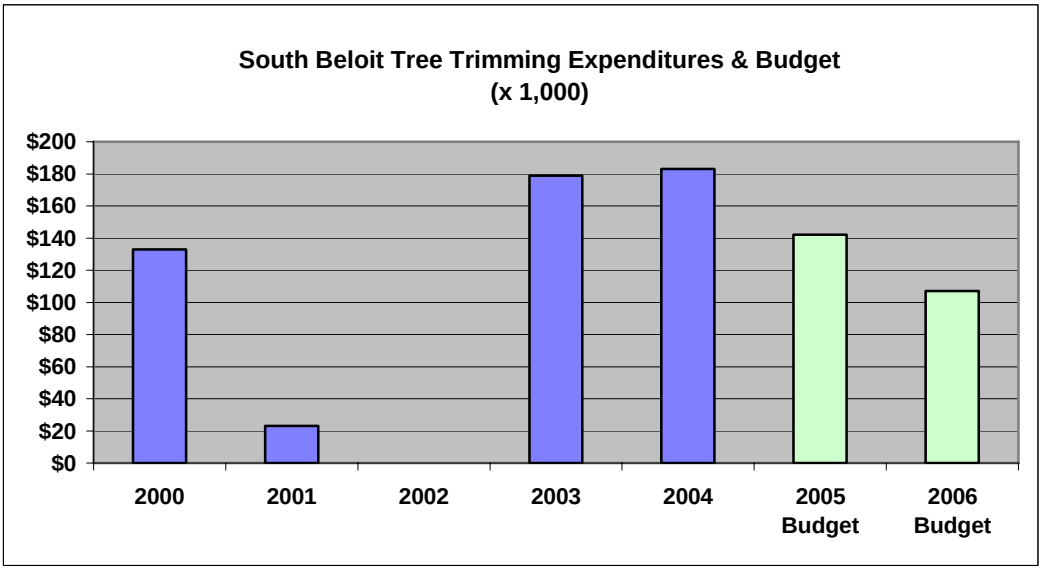
Year	Distribution (x1,000)			Dist. Tree Trimming (x1,000)	Transmission (x1,000)		
	Capital	O & M	Total		Capital	O & M	Total
2000	$852	$403	$1,255	$133	N/A	N/A	N/A
2001	$1,091	$592	$1,683	$23	N/A	N/A	N/A
2002	$621	$439	$1,060	$0	N/A	N/A	N/A
2003	$1,414	$327	$1,741	$179	N/A	N/A	N/A
2004	$1,415	$677	$2,092	$183	N/A	N/A	N/A
2005 Budget	$1,607	$310	$1,917	$142	N/A	N/A	N/A
2006 Budget	$975	$677	$1,652	$107	N/A	N/A	N/A

Figure 23



Note in Figure 24 that South Beloit's annual tree trimming expenditures for the period of 2000 through 2004 was erratic. As mentioned in Section 7 of this report, however, Staff found the tree trimming near South Beloit's electric lines to be well done in all but three isolated locations in May 2005 (see Attachment "A" for details). South Beloit reported that it "intensified tree trimming efforts" in midyear 2003. It also introduced mid-cycle trimming to its four-year tree trimming cycle in 2003, for trimming any fast growing tree that "has or will come into contact" with its lines prior to the next scheduled trim. Based on Staff's field observations in May 2005, South Beloit's tree trimming program appears to be effective.

Figure 24



South Beloit listed a number of planned specific construction and maintenance projects addressing reliability during the 2005-2007 timeframe. It also provided a description of actions taken or planned for each of the worst performing circuits listed in its 2004 reliability report. Each of the problems described in the outage history for each circuit was addressed in some way by the described actions taken or planned. South Beloit's reported actions taken or planned for each circuit seemed reasonable, but it should also address any additional problems revealed on each of the circuits during Staff's circuit inspections.

10. Potential Reliability Problems and Risks

South Beloit reported that the highest percentages of customer interruptions in 2004 were caused by animals (24.46%) and lightning (21.58%). Malfunctioning of overhead equipment was listed as the cause for 14.39% of the interruptions, and a total of 7.2% of the interruptions were attributed to tree related problems on the primary. No other cause category was listed as causing as much as 6% of South Beloit's interruptions in 2004.

Staff's field inspections in May 2005 revealed several deteriorated poles in the circuits inspected, some evidence of lightning damage, but only a few other problems. Tree trimming was, generally, well done. South Beloit needs to investigate all of the structural problems noted and take appropriate remedial actions addressing any problems on those circuits, whether or not noted by Staff, which can significantly affect service reliability or public safety.

11. Review of South Beloit's Implementation Plan for the Previous Reporting Period.

South Beloit included a report on significant deviations from its 2003 plan in its 2004 reliability report. Work scheduled for completion in 2004 was completed during the year with one exception. The projected in-service date for the new River Road Substation was deferred from 6/25/04 to 6/01/07 due to two large customers ceasing operations and load growth being slower than originally expected. This was the only significant deviation from South Beloit's 2003 plan, and the reasons for it seem reasonable.

12. Summary of Recommendations

- First, South Beloit should investigate all of the problems noted during Staff's inspections of worst performing and other circuits (see Section 7) and take appropriate remedial actions addressing any problems on those circuits, whether or not noted by Staff, which can significantly affect service reliability or public safety.

- Second, South Beloit should perform field inspections of all circuits on a regular basis and correct the problems found which can significantly affect reliability or public safety.

- Third, South Beloit should do whatever is necessary to maintain its four-year (minimum) tree trimming cycle in a way that is in compliance with NESC Rule 218 throughout its service territory. South Beloit needs to continue to assure that all trees near its lines throughout its service territory are trimmed such that there are no tree contacts with its energized primary conductors before it returns to trim them again.

MEMORANDUM

TO: Roy Buxton, Engineering Department Manager

FROM: Jim Spencer, Senior Electrical Engineer

DATE: August 17, 2005

RE: Tree Conditions in South Beloit Water, Gas, & Electric Co. Service Territory

1. Introduction

On May 23 & 24, 2005, I performed random inspections of tree conditions near SBWGE electric lines in South Beloit and Rockton. I was accompanied by Greg Ardrey, Alliant Energy's Senior Manager-Customer Service. We performed the inspections by driving around the areas chosen and looking at trees near SBWGE overhead electric lines. Except for the portions of worst performing circuits SHIJ54 and SHWJ672 in South Beloit, we performed the inspections without regard to circuit identification and without the use of circuit maps. This memorandum documents the results of the field inspections and my assessment of the state of tree trimming on those dates in South Beloit and Rockton.

2. Findings

Overall, I found tree trimming throughout South Beloit and Rockton to be very well done. I noted only one tree conflict in South Beloit and two tree conflicts in Rockton, summarized in the spreadsheet below:

Summary of Tree Conditions Field Inspections by ICC Staff			
Utility:	**South Beloit Water, Gas, & Electric Company**	**Date:**	**5/23-24/05**
Circuits:	**Random**	**Inspector:**	**J. D. Spencer, w/ Greg Ardrey (Alliant)**
Gen. Notes:	Tree trimming in South Beloit and in Rockton was very well done, generally, with only three exceptions noted.		
Town	***Item Description***	***Photo(s)***	***Location***
South Beloit			
	Ash tree into primary	M19, M20	On Fischer Rd. between poles 29/52 & 34/52
Rockton			
	Hardwood (ash?) tree into single-phase primary	N19, N20	On Watts Ave. north of Dingman Dr.
	Soft maple tree growing into primary	N21	On Warren St. east of Grove St.

Two of the tree conflicts noted are shown in Figures 1 and 2 on the following page.

Figure 1 (Photo 05M19)
Ash tree into primary
Fischer Rd., South Beloit

Figure 2 (Photo 05N19)
Hardwood (ash?) tree into primary
Watts Ave. N. of Dingman Dr., Rockton

I also spot-checked a location on White School Road just west of McCurry Road in East Rockton where pine trees were growing between phase conductors of SBWGE's Circuit EARJ535 when Greg Rockrohr inspected that circuit in 2004. The pine trees have been topped (as of 5/19/05), and the clearance issue there has been resolved.

In general, I am very favorably impressed with SBWGE's tree trimming program based on my observances in the field in May, 2005.

3. Recommendation

- SBWGE (or its successor company) should continue to assure that it meets the requirements of NESC Rule 218 throughout its service territory by assuring that all trees near its electric lines are trimmed such that there are no tree contacts with its energized primary conductors before it returns to trim them again.